

over-presumptuous in so doing. I have the honour to be, Sir, your most obedient and humble servant,

W. A. HOLLAND,  
Chief Officer of Ship *Sarah Bell*  
*Havre, January 21, Ship "Sarah Bell"*

SIR WILLIAM THOMSON,

DEAR SIR,—In reply to your very kind letter of the 18th, I am most confident and very careful in what I have already reported to you. With this exception, that I myself estimated the spot on the sun to be  $\frac{1}{2}$  diam., but conferring with the captain he estimated it to be  $\frac{1}{3}$  diam., it was purely an estimate of the eye. The first time I observed it I could scarcely believe my own eyes; I immediately and properly adjusted my sextant and observed the sun constantly through the day. The spot appeared to move from the sun's upper limb to the lower limb, and nearly through the sun's centre. The captain and myself most particularly noticed the spot both with and without our telescopes, and we feel quite sure there could not have been any mistake, as I have been in the habit of observing the sun's altitude at the least six times during the day at sea; I add the spot appeared quite black. Weather squally, with a very troubled and confused sea; barometer 29°·93 steady. Trusting my notes may be of some use to you, and that you will hear a more explicit account from other navigators.

W. A. HOLLAND,  
Chief Officer *Sarah Bell*, Havre

#### On the Climate of North Northumberland as Regards its Fitness for Astronomical Observations

IN May, 1880, I became possessed of the telescope, observatory, and astronomical instruments belonging to the late Rev. Henry Cooper Key, M.A., F.R.A.S., and I erected the telescope and observatory at my vicarage at Alnwick, Northumberland. The instrument is a silver-on-glass reflector, the speculum being by Mr. Calver, of Chelmsford, of 18 $\frac{1}{4}$  inches aperture; as regards perfection of figure, I believe it cannot be excelled. As a specimen of the work it is capable of performing under the best conditions I may say that last November I measured  $\gamma^2$  Andromedæ, the components of that exceedingly difficult double star being now separated by only 0"·28 according to the Washington observers. The weather, however, for observational purposes during the last six months of 1880 was so bad here, that I determined to keep a record, as far as possible, of every night in the year 1881, as regards its fitness for astronomical work, and this record I now lay before your readers. I may premise that no fault can be found with the situation of the observatory. It is 250 feet above sea-level, four miles from the sea, there are no mountains or streams sufficiently near to affect the definition, no collieries or manufactories in the immediate neighbourhood; and, if the definition be bad, no cause can be assigned for it but atmospheric disturbance. The following is the record for each month:—

*January*.—In this month there were 11 nights completely overcast; 4 partially overcast; and 16 clear. I opened the observatory on 5 nights, on 4 of which the definition was very bad, and on 1 bad. On 15 nights there was hard frost accompanied by deep snow.

*February*.—The nights were: Completely overcast, 22; partially overcast, 6. The definition was on 4 very bad, on 1 bad, and on 1 fair.

*March*.—Completely overcast, 24; partially overcast, 7. The definition was on 1 very bad, on 1 bad, and on 3 fair. On 2 nights hard frost prevented observations.

*April*.—Completely overcast, 25; partially overcast, 3; clear, 2. The definition was on 2 very bad, and on 2 nights wind, and on 1 snow prevented observations.

*May*.—Completely overcast, 10; partially overcast, 9; clear, 12. Definition on 15 nights was very bad, on 1 bad, and on 4 fair. One of the partially clouded nights was too cloudy for observations.

*June*.—Completely overcast, 14; partially overcast, 2; clear, 14. Definition was on 5 very bad. I was away from home on 9, and engaged on 2 nights.

*July*.—Completely overcast, 26; partially overcast, 1; clear, 4. Definition was on 1 very bad, on 3 bad, and on 1 I was away from home.

*August*.—Completely overcast, 25; partially overcast, 3; clear, 3. Definition was on 1 very bad, wind or cloud prevented observations on 4 nights, and on 1 I was away from home.

*September*.—Completely overcast, 25; partially overcast, 4;

clear, 1. Definition was on 4 very bad, and on 1 of the partially clouded nights there was too much cloud for observations.

*October*.—Completely overcast, 19; partially overcast, 6; clear, 6. Definition was on 4 very bad, on 1 very fine, wind prevented observations on 4 nights, and on 3 I was away from home.

*November*.—Completely overcast, 13; partially overcast, 5; clear, 12. Definition was on 7 very bad, on 2 bad, on 2 fair, and on 1 very fine. Wind prevented observations on 5 nights.

*December*.—Completely overcast, 15; partially overcast, 1; clear, 15. Definition was on 6 very bad, and on 4 fair. Wind prevented observations on 3 nights, on 2 I was away from home, and on 1 engaged.

The summary for the year is as follows:—229 nights were completely overcast; 51 were partially so (but of these 4 were too cloudy for observations); and 85 were clear. Thus 132 nights ought to have been available for observations. Of these the definition on 54 was very bad, on 9 bad, on 14 fair, and on 2 very fine. Wind prevented observations on 16 nights, frost and snow combined on 15, on 2 frost alone, and on 1 snow alone. On 16 I was absent from home, and on 3 engaged. Total, 132.

I need hardly point out to your readers that the above record is a somewhat melancholy one for the astronomical observer. Ours is a cloudy sky; but in addition to the great amount of cloud, the atmosphere here is almost perpetually in a state of violent disturbance, so that difficult and delicate telescopic work can very rarely indeed be attempted. Last year there were only two occasions on which I found the definition really fine, and on those it only continued so for a short while. When the stars are visible, they are, as a rule, when looked at through the telescope, seen to be flaring, flashing, fluttering, jumping, twirling, or waving—anything in short rather than remaining steady. This is clearly owing to atmospheric perturbation, because on some very rare occasions the images are still, and the definition is superb. I have not been in the habit of using a telescope for a sufficient length of time to say whether last year was an exceptionally bad one for the North of England, but from what I have heard and read, as well as from nine years' residence here, I am afraid it was not. Perhaps others of your readers can throw a little light on this point.

JEVON J. MUSCHAMP PERRY  
St. Paul's Vicarage, Alnwick, January 4

#### Primitive Traditions as to the Pleiades

MY conclusions as to the Pleiades having been believed to be in early ages the centre of the universe, were not in any way based upon the singular name *Alcyone* for the principal star in that group. I can hardly account for my having so long forgotten the meaning of that name, and its connection with the belief I had found vestiges of, as to the Pleiades being the centre of all things. It is probable that at first I regarded its significance as a mere accident, as Dr. Tylor evidently does, and dismissed it from my mind. The best proof of the widespread traces of the belief in question is to be found in the fact that even since this correspondence took place I have met among the Berbers of Morocco a name for *Alcyone*, which has precisely the same meaning, and which they tell me, was given to that star because Paradise is in them, and they are the centre of all things. I have also found that the idea, which, as I stated in my last letter, I have for many years entertained, that those stars were observed by means of openings or passages in temples in early ages, is manifestly well founded.

I find that in the Sahara there are temples or ancient mosques, in which the year is still regulated in this way, there being a tube from the top of the building, very small above and larger below, through which the southing of those stars is observed. I have this not only from natives of the Sahara, but also from a European here who has often heard of the system, though he did not know which were the stars that were observed.

Even the Moors have a vestige of the practice in the singular belief that those stars "rest on the top of the mosques." In the feast of tabernacles, too, which is to be found in the Sahara as well as in far-distant quarters of the globe, the Berber tribes build their temporary tents with a hole at the top, so that the young men who are being instructed may see the Pleiades passing overhead. The Jews here have the same custom, and endeavour to explain it by a curious legend as to Jonah's journey to Nineveh. They forget apparently that Moses wrote a good many years before Jonah was swallowed by the whale.

We can now understand the vestiges in Egypt of a popular belief that the Pleiades are in some way connected with the Great Pyramid, the existence of which was observed with a very natural feeling of surprise by Prof. Piazzì Smyth.

I am convinced that the evidence will be regarded as conclusive that the widespread identities which exist as to the year of the Pleiades and its traditions cannot, as Dr. Tylor assumes apparently, have grown up everywhere from the peculiar shape or position of these stars, but that they must be a heritage, if not from a common ancestor, at least from a common source.

Tangier, January 25

R. G. HALIBURTON

#### ON THE VEGETABLE FOOD OF THE NEW ZEALANDERS IN PREHISTORIC TIMES

WE are indebted to the now venerable Colenso for a deeply instructive and interesting treatise on the vegetable food of the Maoris in the days before Captain Cook's visit. After a residence of almost half a century among these people, during which he has most assiduously studied their ways, manners, and literature, none could write on any subject touching their history with more assurance. Two gross errors have largely and repeatedly been industriously published concerning these Maori—that they were ignorant of all art, and that they suffered from want of food; and from these assumed facts the deduction has been made that therefore they were when first discovered in a savage and starving state, out of which they have been raised by their intercourse with Europeans. As to the want of food, Mr. Colenso asserts that the natives of the North Island had at this time attained to even a high system of agriculture, and that they were passionately fond of cultivating their grounds.

The ancient New Zealander had plenty of good food, but only such as was to be obtained by labour. For them nature had no lavish gifts—no bread-fruit, no cocoa-nuts, no plantains or bananas—fruits from trees growing almost spontaneously and yielding without toil their delights to mankind. But, on the contrary, the Maoris got their vegetable food by constant industry and hard labour, and this was doubtless in favour of the development of the race, helping the "survival of the fittest." And not only were they great cultivators of the soil, but when first known they were in a state of civilisation far beyond that in which our own forefathers were when Cæsar first led his victorious army among them; indeed Colenso doubts if any ancient people had ever—wanting the knowledge of the metals—advanced so far; and he in a very pleasant manner reminds us that, as Xenophon remarked, "Agriculture is the nursing mother of the arts," and that the agriculturist is bound to the soil; it becomes sacred to him; he is compelled to build houses; unlike the nomad shepherd. Hence comes the town, and then the fortified places of strength, all of which the Maoris had, and none of which their neighbours the Australians and Tasmanians ever dreamt of.

One of the oldest legends of the Maoris treats of their favourite and beneficent hero Maui as catching and binding the sun to prevent his travelling so fast, so that man might have longer daylight to work in. In their plantations all worked alike—the chief, his wife, his slave. It was a pleasing sight to see the evenness of their tillage, the regularity of their planting and sowing. In planting the *kumara* and the *taro* the plants were generally set about two feet apart in true quincunx order, with no deviation from a straight line when viewed in any direction; weeds were most rigorously kept down. One peculiarity Colenso calls special attention to, one in which they seemed to differ from all other agricultural races—they never used any kind of manure or fertiliser, unless indeed under the latter denomination might come the fresh annual layers of dry gravel which they spread over their *kumara* plantations. Their whole inner man seemed to revolt against the idea of employing decaying substances,

and when the early missionaries first used such substances in their kitchen gardens, it was brought against them as a charge of high opprobrium; and even in later days, when they saw the beneficial effects arising from the use of manure on potato-growing, they could not get over their prejudices, but chose rather to prepare fresh ground every year, doing this generally by felling and burning the timber on the outskirts of the forest, and with all the extra labour of fencing against pigs.

Their, in every respect, most important food-plant was the *Kumara* (a variety of the sweet potatoe); the use of it would seem to date from prehistorical times, as their many legends evidently show. In good seasons and soils its yield was plentiful, and it is interesting to remark a fact in connection with this crop, that may bring to the reader's mind the memory of the same thing being done in Ireland with the potatoes. Long before the tubers of the *Kumara* are of a full size, these are laid under contributions, each plant being visited in turn, and the largest tubers are excavated by means of a small sharp-pointed spade, after which the plant is "earthed" up; these stolen tubers are greatly esteemed. The general digging-up occurs in late autumn, but always before there is any expectancy of frost, and the tubers are carefully sorted. Colenso especially noted the number of well-marked varieties of *Kumara*, several of which were of great antiquity, and permanent. Over thirty varieties are distinguished, and some old sorts are known to be lost. All the sorts came true, and never varied except as to size. As all of these came down from the cultivation of the tubers, the question at once arises, How were they at first derived? The oldest Maoris never heard of the *Kumara* flowering, nor did they remember of the introduction of a new sort, but always said they had them of old from their forefathers. In the striking story of the murder of Rangiwhakaoma, translated by Colenso, "a lad, son of Te Aotata, is asked, 'Whither art thou going?' and he replies, 'To look at the *Kumara* in thy store;' but he is persuaded to descend into the unseen world, in order to see the beautiful *Kumara* there, which, when he saw the great heaps of, and was lost in admiring them, lo! the whole piled-up stack of *Kumara* was made to fall suddenly upon him, so that he was immediately killed;" and here the translator adds a practical note to the effect that, in order to let the air in and keep the tubers from mould, they were always packed in great loose heaps, and under cover. There is little doubt that, if the growers of potatoes had adopted some such method of storing their crops as these Maori did with their sweet potatoes, the loss from the potato disease would not have been so great as it very notoriously has been among the stored crop.

The second plant most generally cultivated by the Maori was the *taro*—this was propagated by off-sets; but, from its being a perennial, and always in season, its tubers were not stored, but dug up when wanted. Of this plant over twenty varieties were known, which, like the *Kumara*, differed greatly in size, quality, and in the colour of the flesh. This tuber played a very important part in many of the higher ceremonial observances—as at the naming of a newly-born child of a chief; at the death of a chief; at the exhumation, which in due time always followed; and also at the visits of welcome strangers.

The third food-plant greatly cultivated was a gourd called *hue*. This noble and highly useful plant was annually raised from seed, and was the only food-plant so propagated by the Maoris, and yet curiously enough of this plant, though yielding seed in great plenty, there is only one species and there are no varieties. As an article of food the fruit was only used when young, and always baked, like the *Kumara* and *taro*, in a common earth oven, and it was eaten like these both hot and cold. It came into use in the summer, before the *Kumara*